TAGLESS INDOOR POSITIONING AND OBJECT TRACKING USING A WIRELESS SENSOR NETWORK

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Introduction. This project seeks to implement a passive indoor positioning and tracking platform using Wi-Fi signals. It is well known that RF wave can be blocked by an object which results in signal attenuation [1 - 2]. The principle of this proposal is based on this phenomenon when the line-of-sight (LOS) link is blocked by an object. Hence, when a grid of such LOS links is tresspassed, it can be detected and tracked within the region.

Materials and methods. Within the project, a received signal strength indicator (RSSI-) Logger has been designed as a simple command line interface (CLI) acquisition tool that logs Wi-Fi RSSI values from Wi-Fi receivers using the nl80211 feature standard. It runs on GNU/Linux (tested on Ubuntu 14.04LTS 64-bit distro) and is written in C++ language.

Results and discussion. A Linux command known as the "iw" is commonly used to obtain Wi-Fi related information. We investigated the source code to understand how "iw" accesses the "libnl" library (i.e. nl80211 interfacing library), and apply it to the logger as is designed in Figure 1.

The main loop in the software is an event polling that continuously monitor for the SIGINT signal and a timer trigger. The SIGINT signal, generated using CTRL-C key combination, will end the program while the timer trigger will time a fixed duration to send a beaconing request to the Wi-Fi receiver and records the result received.

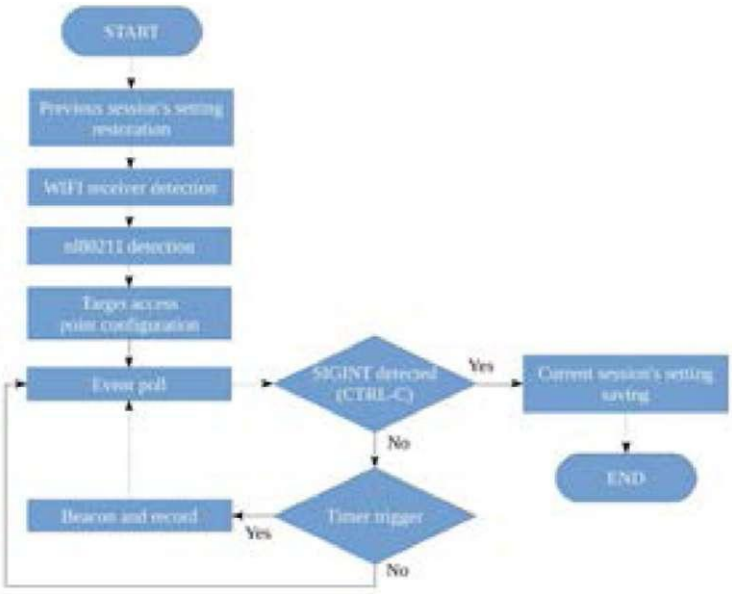

Figure 1. Design flow of the RSSI Logger

Conclusions. A method of extracting RSSI reading from theWiFi transmitter and receiver has been successfully proposed by making use of nl80211 feature standard.

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References.

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